



STEMsational Ag: The Virtual Farm

MIDDLE TENNESSEE STATE UNIVERSITY



Module 12: Farm Fashion UNIT 1: FANTASTIC FIBERS Kindergarten – Grade 2



National Institute of Food and Agriculture
U.S. DEPARTMENT OF AGRICULTURE



This work is supported by the Agriculture and Food Research Initiative, Education and Workforce Development Program. [grant no. 2021-67037-33380/project accession no. 1024880], from the U.S. Department of Agriculture, National Institute of Food and Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and should not be construed to represent any official USDA or U.S. Government determination or policy.

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Module 12: Farm Fashion
UNIT 1: FANTASTIC FIBERS
Kindergarten – Grade 2



Kindergarten – 2nd Grade:

Introduction to the Unit:

From the t-shirts you wear to the socks on your feet, clothing comes from fibers. Natural fibers can grow from plants like cotton or bamboo or be harvested from animals like sheep for wool. Some fibers are synthetic or man-made like polyester. All fibers are twisted into yarns, and the yarns are then woven into fabric. Today you will investigate different types of natural and synthetic fabrics and their durability.

Pre-assessment: Read the following questions and write your answers on paper.

- 1) What are cotton, wool, and silk? Why are they important in our daily lives?
- 2) What are the different types of fabric around your home? Find examples and show your teacher or your parent or another adult.
- 3) What do you use different fabrics for?
- 4) Use a piece of paper and draw and label a picture with as many details about fabric as you can think of. How does fabric feel? Is it thick or thin?

Purpose:

- ▶ To explore different fabrics and understand their uses in our daily lives.



Student Learning Outcomes for the Unit:

- ▶ Student will investigate different types of fabrics and their characteristics.
- ▶ Student will compare the qualities of different fabrics.
- ▶ Student will demonstrate an understanding of the importance of plant fibers and how they impact their everyday life.
- ▶ Students will understand why different types of fabric exist.
- ▶ Students will recognize or suggest different uses of fabric.

National Agricultural Literacy Outcomes

Agriculture and Environment, Theme 1

T1.K-2

C. Identify natural resources

Food, Health, & Lifestyle, Theme 3

T3.K-2

B. Recognize that agriculture provides our most basic necessities: food, fiber (fabric or clothing), energy, and shelter

Vocabulary Words:

- ▶ **Fibers:** materials from nature or man-made that form the foundation for fabric
- ▶ **Natural:** natural fibers that come from plants, animals, and insects and are woven into fabric
- ▶ **Synthetic:** man-made fibers that are created from a chemical process
- ▶ **Cotton:** natural fiber that comes from the seed of the cotton plant
- ▶ **Wool:** natural fiber that comes from animal hair like sheep, llamas, and alpacas
- ▶ **Silk:** natural fiber that comes from the cocoon of the silk moth
- ▶ **Linen:** the fabric made from spun flax fibers
- ▶ **Flax:** type of plant that produces long natural fibers used to make linen fabric









Materials Needed:

- ▶ Paper and writing utensil
- ▶ 1-Magnifying glass
- ▶ 3-Pieces of different types of fabric large enough to wrap around a golf ball. Examples are denim, light-weight cotton, nylon stocking, fleece, polyester fabric, wool, etc.
- ▶ 1-Golf ball
- ▶ 1-Piece of 60-grit sandpaper
- ▶ 3-Rubber bands
- ▶ Various types of fabrics (multiple) if you decide to complete the activity, "Build a Fiber Farm Fort"



Activity 1: Fiber Scavenger Hunt

- ▶ Go through your closets and dressers and see if you can find these clothing fibers!
- ▶ How many different types of fabrics did you find? Did you find other fabrics besides these?

NAME OF FIBER	DESCRIPTION	CLOTHING IMAGE EXAMPLE	FIBER ORIGIN IMAGE
Cotton	Cotton is a soft and fluffy fiber that grows in a protective case around the seeds. Cotton can be found in many different clothing like t-shirts and jeans. Look at the clothing labels in your closet; can you find something with cotton?		
Silk	Silk comes from the cocoon of a silkworm. Formal dresses, ties, and scarves are made with silk. See if you can find some silk clothing. What does it feel like?		
Wool	Wool comes from sheep, goats, rabbits, and many other types of animals. It's known for its warmth. The main products of wool are sweaters and scarves. How many items of clothing can you find that have wool in them?		
Linen	Linen comes from the flax plant. Clothing made from linen is light and comfortable and actually increases in strength when wet! Can you find any linen in your home?		



Activity 2: Fiber Super Strength Activity

Materials:

- ▶ Paper and writing utensil
- ▶ Fiber Super Strength Activity Handout on pages 6-9
- ▶ 1-Magnifying glass
- ▶ 3-Pieces of different types of fabric large enough to wrap around a golf ball.
Examples are denim, light-weight cotton, nylon stocking, fleece, polyester fabric, wool, etc.
- ▶ 1-Golf ball
- ▶ 1-Piece of 60-grit sandpaper
- ▶ 3-Rubber bands



Fiber Super Strength Activity

Directions: Use this handout to record your observations during the activity. There are directions in the lesson in the course to help you complete this activity.

Part 1: Observation

Directions: In this table, write the names of the three fabrics you are using in this activity. Draw a picture of what they look like.

Fabric 1	Fabric 2	Fabric 3

Part 2: Fabric Super Strength

Directions: Fill in this chart as you complete the activity from the lesson.

Fabric	Number of Scrapes (keep a tally)	First Wear Scrape (write a number)	Breakthrough Scrape (write a number)



Directions:

- 1) In Part 1 (page 6) of the activity, fill out the names of the three fabrics you are using in this activity.
- 2) Use magnifying glasses to look closely at each fabric sample. What do they look like? Also, feel each fabric. What does it feel like? Write down your observations and make a drawing of each fabric on the handout.
- 3) Wrap one piece of fabric tightly around a golf ball and secure it with a rubber band. Below is an image of what this will look like.



- 4) Secure a piece of sandpaper (grit side up) on top of a table and lightly drag (don't press) the fabric-wrapped golf ball across the sandpaper.
- 5) Use the magnifying glass to observe the area where the fabric was dragged across the sandpaper. Was there any wear after just one scrape? View an example below.





- 6) Continue to test the fabric one scrape at a time. In Part 2 of the handout, make a tick mark for each scrape in the Number of Scrapes column. After each scrape, look at the area with the magnifying glass. What do you notice? View an example below.



- 7) When you notice some wear on the fabric, tally and record the number of scrapes in the handout chart under "First Wear" for that fabric.
- 8) Continue scraping the fabric (keep counting!) until you notice a hole or tear. Record your observations on the handout.
- 9) How many times did it take for each fabric to wear through? Which one wore the fastest? Which one was the most durable? Below is an example of a fabric after multiple scrapes.



- 10) Record the number of scrapes in the chart under "Breakthrough" for the fabric once you break through the fabric and the golf ball is exposed.



Activity Processing Questions

- 1) What makes fabrics different?
- 2) Which fabrics were the strongest?
- 3) Which fabric needed the most scrapes to show the first signs of wear?
- 4) Which fabric needed the fewest scrapes to show the first signs of wear?
- 5) Why do certain parts of your clothes, such as the knees of pants or the elbows of shirts, wear faster than other parts?
- 6) Which fabric qualities do you think are the most important for the durability of the fabric? (For example, the type of fiber in the thread, strength of the thread, type or tightness of the weave.)

Make A Fiber Farm Fort:

- ▶ With permission from an adult, gather as many different fabrics as you can: cotton t-shirts, wool hats, silk scarves, linen pants, and anything else you think has an interesting texture, feels snuggly, or makes fun noises.
- ▶ Pile these fabrics into a nest and climb in.
- ▶ Which fabrics are your favorite? Why? Where did each fabric come from?
- ▶ Enjoy your fabric fort!

References and Additional Information

- ▶ *Compare Fabric Samples* (2013). Teach Engineering: University of Colorado.
- ▶ "Basics Of Textiles/ Introduction To Textile/ Definition of Textile/ What Is A Textile?" (www.youtube.com/watch?v=x_wEHCcKEUo)
- ▶ "Fiber To Fabric, Part 1/2, English, Class 6" (www.youtube.com/watch?v=YjC2BhLIQH0)

Post Assessment

- 1) What are cotton, silk, and wool?
- 2) Which fabric is your favorite and why?
- 3) Return to your pre-assessment drawing about fibers. Add more labels and descriptions after participating in the lesson's activities.
 - ▶ Include:
 - Where the fiber came from (which plant or animal).
 - Any characteristics about the fiber (is it strong, lightweight, warm).
 - What do we use different fabrics for?